



Case Study

application Subgrade Stabilization
location Nansemond Parkway, Suffolk, VA
product Mirafi® RS580i & HP270

job owner City of Suffolk, VA / VDOT
engineer GET Solutions
contractor Branscome, Inc.
date of installation March 2012

TenCate® develops and produces materials that function to increase performance, reduce costs and deliver measurable results by working with our customers to provide advanced solutions.

THE CHALLENGE

During the construction of the pavement in a section of the Nansemond Parkway widening project, the contractor and geotechnical firm encountered soft subgrade conditions. They consisted of high plasticity clays that held water. They initially undercut to a depth of 3 feet below the base course elevation and replaced the material with structural quarry sand. While this helped the situation, it still did not achieve proof roll conditions. They also tried using a light weight separation geotextile that

met VDOT standards with a higher quality fill in a small area with little improvement.

THE DESIGN

The geotechnical firm investigated using a higher strength geosynthetic option to see if it would help stiffen up the sub-base section. After discussing options, they decided on installing a layer of TenCate Mirafi® RS580i* woven geosynthetic on the subgrade with 12"-15" of #57 stone to allow for groundwater to dissipate. On top of this, Mirafi® 160N was initially considered to provide separation between the gap graded #57 stone and the well graded base course aggregate. Needing something to provide separation and additional reinforcement, they also considered Mirafi® 160N and

Mirafi® HP270. After reviewing the cost difference between Mirafi® 160N and Mirafi® HP270, they opted for Mirafi® HP270. An additional 8"-10" of well graded recycled concrete completed the sub-base section.

Since the project receives funding from both the City of Suffolk and Virginia Department of Transportation (VDOT), both agencies were required to approve the design change. After reviewing the information, the subgrade stabilization design was approved.



High plasticity clay (CH) subgrade soils after removing previous sandfill.



Mirafi® RS580i placed over the soft subgrade areas.

THE CONSTRUCTION

The construction went extremely well and was completed quickly. Ferguson Waterworks had the TenCate Mirafi® geosynthetics stocked in nearby Chesapeake and was able to quickly get the products on site. The structural sand placed had to be excavated in sections and then Mirafi® RS580i was placed along with the #57 stone. Once the roughly 500' of road section was completed, Mirafi® HP270 was rolled out on the #57 stone, before placement of the recycled concrete aggregate.

THE PERFORMANCE

While over 3 feet of structural sand did not achieve the proof roll requirement, the 20" section with TenCate Mirafi® geosynthetics did provide enough support for the pavement section to be placed. This allowed the project to continue on track. While they hope to not encounter similar conditions along the widening, they now know that this sub-base section will solve their problems for future construction.



Placement of #57 stone over Mirafi® RS580i.



Placement of the base course aggregate over Mirafi® HP270 prior to the proof roll.

*Patent pending

TenCate® Geosynthetics Americas assumes no liability for the accuracy or completeness of this information or for the ultimate use by the purchaser. TenCate® Geosynthetics Americas disclaims any and all express, implied, or statutory standards, warranties or guarantees, including without limitation any implied warranty as to merchantability or fitness for a particular purpose or arising from a course of dealing or usage of trade as to any equipment, materials, or information furnished herewith. This document should not be construed as engineering advice.

Mirafi® is a registered trademark of Nicolon Corporation.

© 2012 TenCate Geosynthetics North America